EPCRA Section 313 Toxic Release Inventory Reporting
Naval Air Weapons Station China Lake
Reporting Year 2020

1.0 PURPOSE

This document summarizes the results of Toxic Release Inventory (TRI) compliance reporting for Naval Air Weapons Station China Lake (NAWSCL) for Reporting Year (RY) 2020.[1] Annual TRI reporting is governed by regulations established under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA Section 313), as interpreted by United States (U.S.) Department of Defense (DoD) and Department of Navy (Navy) policy and guidance. This document was prepared by the Naval Facilities Engineering Systems Command Southwest (NAVFAC SW) Environmental Management Division at NAWSCL and Multi-Media Environmental Compliance Group (MMEC Group) under Contract Number N62470-16-D-2405, Delivery Order N6247318F4764.

2.0 LOCATION

NAWSCL is in the upper Mojave Desert, approximately 150 miles northeast of Los Angeles, California (CA). The installation occupies parts of three counties—Kern, San Bernardino, and Inyo—and its closest neighbors are the cities of Ridgecrest, Inyokern, Trona, and Darwin and several other DoD installations. The main gate is at the intersection of Inyokern Road and China Lake Boulevard, in Ridgecrest, CA. NAWSCL is the Navy's largest single landholding, covering just over 1.1 million acres. This area represents 85 percent (%) of the Navy's land for Research, Development, Acquisition, Test, and Evaluation (RDAT&E) use and 38% of the Navy's landholdings worldwide.

NAWSCL consists of two main land areas connected by a travel route; all landholdings are contiguous. The main areas are the North and South Range Complexes, which are subdivided into land use management units for planning purposes. Based on DoD Consolidated EPCRA Policy and EPCRA Section 313 regulations, NAWSCL is considered one facility, because all the land use management units are totally enclosed within, adjacent to, or contiguous with the main installation.

3.0 MISSION

NAWSCL's mission is to support the Navy's research, test, and evaluation missions to provide cutting-edge weapons systems to the warfighter.

4.0 PRIMARY ORGANIZATIONS AND ACTIVITIES AT THE FACILITY

The Naval Air Warfare Center Weapons Division (NAWCWD) is a major tenant of NAWSCL. NAWCWD conducts RDAT&E activities and in-service engineering for Navy, Department of Air Force, Department of Army, and joint service weapon systems. NAWCWD is involved in all aspects of developing and testing weapon systems, including propulsion, guidance, fuzing, and warheads. NAWCWD also develops and tests airborne electronic warfare systems and performs aircraft weapons integration.

Other organizations, tenants, and detachments with operations at NAWSCL include:

- Air Test and Evaluation Squadron Three One (VX-31), which provides the resources, expertise, and support needed to plan and execute safe and efficient ground and flight tests of developmental weapons and weapons systems.

[1] Reporting year 2020 addresses toxic chemical usage and releases in calendar year 2020, with TRI reports due by July 1, 2021.

- Air Test and Evaluation Squadron Nine (VX-9), which conducts operational test and evaluation of all air-to-ground weapons, air-to-air weapons, sensors, electronic warfare systems, and mission software upgrades to aircraft and weapon systems.
- The Branch Health Clinic, which provides patient and family-centered care to the NAWSCL active duty and retired military and their families.
- The Marine Aviation Detachment at NAWSCL, which provides project management, aviation support, technical expertise, and fleet support for assigned Marine Corps weapons systems and related devices throughout the weapons systems' life cycles.
- Navy Explosive Ordnance Disposal (EOD), which consists of forces of highly trained, skilled technicians who are experts in explosives, diving, and parachuting. Aboard NAWSCL, EOD detachments support weapons tests, explosive hazardous waste treatments, response to emergency incidents, and training.
- NAVFAC SW China Lake Detachment, which is responsible for the public works, planning, engineering and design, construction, real estate, environmental services, and acquisition and disposal of facilities and real estate at NAWSCL.
- Naval Construction Training Center Port Hueneme Detachment, which is at the Center for Seabees and Facilities Engineering (CSFE) site. This detachment specializes in training Navy combat engineers in water well drilling and blasting and quarry operations. They currently conduct the Water Well Drilling School and Blasting and Quarry Technician School four times per year, inclusive of classroom instruction and field training.
- Naval Supply (NAVSUP) Fleet Logistic Center San Diego (FLCSD), which manages fuel delivery storage and distribution at NAWSCL, including operation of the Air Field Fuel Facility (Fuel Farm).
- Four Coso geothermal electricity generation plants, which are approximately 25 miles north-northwest of the NAWSCL main gate. Naturally occurring underground water and steam are pulled from wells drilled over a wide area and piped to the electricity generation plants to power turbines. The condensed steam and cooled water are then re-injected into the ground.
- Fleet Readiness Center West (FRCW) Detachment, consisting of 28 sailors and 33 civilian contractors supporting two test and evaluation squadrons and various projects.

5.0 RECENT TRI REPORTING HISTORY

NAWSCL submitted U.S. Environmental Protection Agency (USEPA) Form R reports for the following chemicals and reporting years:

- Lead (installation, 2001 and 2007; ranges, 2002–2006 and 2008–2019)
- Naphthalene (installation, 2015, 2017, 2019)
- Mercury (installation, 2001–2009; ranges, 2008)
- Chlorine gas (installation, 1999–2013, 2015–2016; ranges, 2008–2011, 2014–2017)
- Aluminum dust (installation, 2007; ranges, 2003–2006 and 2008–2009)
- Formaldehyde (installation, 2007)
- Ammonia (installation, 2001, 2002, and 2004)

6.0 HAZARDOUS MATERIAL AND TRI CHEMICAL DATA

TRI requires submittal of a Form R for quantities of any listed chemical exceeding one of the following thresholds:

- 25,000 pounds (lb) per year for chemicals manufactured onsite
- 25,000 lb per year for chemicals processed onsite
- 10,000 lb per year for chemicals otherwise used onsite
- 100 lb per year for per- and polyfluoroalkyl substances (PFAS)
- Chemical-specific thresholds for persistent bioaccumulative toxic (PBT) chemicals
    - 0.1 gram per year for dioxin and dioxin-like compounds
    - 10 lb per year for benzo[g,h,i]perylene, chlordane, heptachlor, hexachlorobenzene, isodrin, mercury, mercury compounds, octachlorostyrene, pentachlorobenzene, polychlorinated biphenyls (PCBs), and toxaphene
    - 100 lb per year for aldrin, lead, lead compounds, methyoxychlor, pendimethalin, polycyclic aromatic compounds (PACs), tetrabromobisphenyl A, and trifluralin

Section 7321 of the National Defense Authorization Act (NDAA) for fiscal year 2020 (P.L.116-92) added 172 individual PFAS chemicals to the TRI list of chemicals with an effective date of January 1, 2020. RY2020 Form R reporting is required for any of these PFAS chemicals individually manufactured, processed, or otherwise used in quantities exceeding 100-lb-per-year. The NAWSCL threshold evaluation for these chemicals is presented in Section 6.4.

NAWSCL comprises numerous RDAT&E activities, including the Michelson Laboratory, Lauritsen Laboratory, McLean Laboratory, Salt Wells Propulsion Laboratory, China Lake Propulsion Laboratory, and Weapons Ordnance Development Laboratory. TRI chemical use in the laboratories is generally covered under the TRI laboratory exemption, for which the following guidance is provided on page 31 of the Navy's *Getting Started with the Emergency Planning and Community Right-to-Know Act (EPCRA)—A Basic Guidance Document for Navy Facilities*, May 2009:

> *The laboratory activity exemption applies to toxic chemicals manufactured, processed, or otherwise used in a laboratory for quality control, research and development, and other laboratory activities. It is not intended as a blanket exemption for any facility that has the title 'laboratory' in its name. To qualify, the toxic chemical must be used directly in or produced as a result of a laboratory activity, and the manufacture, processing, or otherwise use must occur under the supervision of a technically qualified individual. Generally, bench–scale activities and toxic chemicals coincidentally manufactured from laboratory activities are considered exempt. Specialty chemical production, pilot plant scale activities, and activities that do not directly support research and development, sampling and analysis, or quality assurance and control are not exempt.*

From this guidance, activities that do not directly support research and development are not covered under the TRI laboratory exemption. USEPA provides a more detailed description of activities not covered under the TRI laboratory exemption:

> *Non-exempt activities include support activities such as the use of EPCRA section 313 chemicals used to clean laboratory glassware and maintain laboratory equipment. EPCRA section 313 chemicals in pilot plant scale*

> *operations, laboratories that produce specialty chemicals, and activities conducted outside the laboratory (e.g., wastewater treatment, photo processing) are not exempt.*[2]

This guidance was used to help identify non-exempt uses of TRI chemicals at NAWSCL. The remainder of Section 6.0 presents TRI chemical threshold information for the non-exempt activities and materials at NAWSCL that have been identified to date.

Section 7.0 aggregates the results from Section 6 and identifies those chemicals requiring a Form R from NAWSCL.

6.1 General Hazardous Materials

The NAWSCL Hazardous Material Minimization (HAZMIN) Center is operated by NAVSUP and currently issues hazardous materials to a limited number of work centers, including the FRCW Detachment, NAWSCL Air Operations, the VX31 aircraft squadron, and the VX9 squadron.[3] The HAZMIN Center does not supply the large laboratories at NAWSCL, but may do so in the future.

Data regarding 2020 TRI chemical quantities issued to NAWSCL activities through the HAZMIN Center were obtained from the Enterprise Resource Planning (ERP) database by Charles Roiz of NAVSUP FLC. Table 1 presents these data.

ERP is a data management system implemented by NAVSUP FLC in 2012. It tracks HAZMIN Center issuance of hazardous materials to individual organizations on and off base. Information captured includes date of issue, number of containers issued, and total issue weight. Chemicals in each hazardous material issue are tracked using Safety Data Sheet (SDS) information maintained within ERP. Quantities of individual chemicals issued to NAWSCL work centers and shops can be determined for the calendar year with the ERP Usage Report (ZRMIM0010). When more detail is required to track a specific chemical, the ERP Transaction History Report (ZRMMD0006) can be used to identify the shops using the chemical and the specific hazardous materials that contain the chemical.

NAVSUP FLC personnel ran the ERP Usage Report for calendar year 2020 at NAWSCL. MMEC Group personnel sorted and summed these data to yield individual chemical issue quantities (by Chemical Abstracts Service [CAS] number) for each chemical in the hazardous materials issued during the year. From these data, TRI chemical issues for 2020 were compiled using the MMEC Group comprehensive listing of TRI chemicals and compound categories by CAS number.

Only “301” and “501” transactions from the HAZMIN Center were extracted from the ERP Usage Report. These transactions represent hazardous material issues from the HAZMIN Center to the work centers (“301” or “bin issues”) and direct issues to the work centers that do not physically pass through the HAZMIN Center (“501”). Scrapped items (“551”) and bin-to-bin transfers (“309”) were not extracted from the ERP Usage Report, as that would be double counting, according to NAVSUP FLC personnel.

Note although not reported in the HAZMIN Center usage data for RY2020, lead and/or lead compounds are also in lead-acid batteries used at NAWSCL. These items are covered under the TRI motor vehicle maintenance exemption and/or the TRI article exemption. Note also that none of the shops at NAWSCL perform battery maintenance.

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[2] *EPCRA Section 313 Questions and Answers, Addendum for Federal Facilities*, EPA 745-R-00-003, September 2000, page 26, Question 71.

[3] TRI chemical use by aircraft squadrons is typically covered under the TRI motor vehicle maintenance exemption.

Table 1. 2020 TRI Chemical Quantities from Hazardous Material Issued Through the HAZMIN Center

TRI Chemical	2020 Total Chemical Issued (lb)
Aluminum (fume or dust)	19
Barium compounds	4
Chromium compounds	53
Diethanolamine	10
Diisocyanates	3
Diphenylamine	--
Ethylbenzene	7
Ethylene glycol	3
Glycol ethers	32
Hexane	1
Isopropyl alcohol	--
Lead	--
Lead compounds	0.1
Manganese Compounds	171
Methanol	1
Methylene chloride	30
Methyl isobutyl ketone	32
N-Butanol	4
Naphthalene	--
Nickel	12
Phenol	20
Sec-butyl alcohol	--
Sodium nitrite	--
Toluene	122
1,2,4-Trimethylbenzene	4
Xylene	46
Zinc compounds	21

CAS = Chemical Abstracts Service; lb = pound(s); TRI = Toxic Release Inventory

There is one known non-exempt use of TRI chemicals in general hazardous materials at NAWSCL: ethylene glycol in arresting gear on the airfield flight line.

A solution of ethylene glycol and water is used as a force-dampening fluid in aircraft arresting gear units on airfield runways. When necessary, incoming aircraft hook onto an arresting wire that is stretched across the runway to slow their speed. There are five sets of arresting gear at NAWSCL—each consisting of two dampening fluid chambers (and associated reservoir tanks) located on opposite sides of the runway, an arresting wire, and two internal combustion engines to reel in the arresting wire after use. A dampening fluid chamber and associated reservoir tank collectively hold approximately 450 gallons (gal) of fluid; this fluid absorbs the force from the arresting wire during tailhook landings.

According to Air Operations Flight Support Group (Air Ops) personnel, none of the dampening fluid chambers from the arresting gear systems were emptied and refilled in 2020.[4] In addition, 220 gal of dampening fluid were added to other tanks to top off the units.

[4] Email from Thomas Plowman, NAWSCL Air Ops Flight Support, E-28 Manager, to Natalie Baum, MMEC Group, June 4, 2021.

A review of the ERP Usage Report did not show the issue of dampening fluid (coolant) to Air Ops in 2020 because the coolant was already on hand from a large volume issued in 2019. The total ethylene glycol used in dampening fluid in 2020 is as follows (where 9.17 lb/gal is the density of the dampening fluid):

- 220 gal x 0.60 x 9.17 lb/gal = 1,210 lb ethylene glycol

This additional amount of ethylene glycol use will be accounted for in the otherwise used threshold in Section 7.0, Table 2.

In addition, a contractor supplies antifreeze to NAWSCL that is not listed in the HAZMIN Center ERP data. According to discussions with NAWSCL, this antifreeze was used in vehicles such as fire engines, facility passenger cars and pickup trucks, cranes, and heavy equipment. Most of the antifreeze supplied by the contractor at NAWSCL would be covered under the TRI motor vehicle maintenance exemption or the facility and grounds maintenance exemption, depending on how the vehicle is used.

6.2 Fuels

The following fuels are used at NAWSCL:

- Jet fuel
- Diesel fuel
- Gasoline
- Propane
- Compressed natural gas (CNG)

Liquid fuels are delivered by truck from the Defense Fuel Supply Point (DFSP) Barstow to various storage tanks throughout the facility. A list of tanks and their locations is in the NAWSCL Tank Management Plan. The NAWSCL Fuel Farm is the main storage and distribution facility for jet fuel. Fueling stations throughout the facility are used only by Navy, DoD, and base contractors to provide services to NAWSCL operations and personnel, as required by their contracts.

Most of the fuel used at NAWSCL is covered under the TRI motor vehicle maintenance exemption (e.g., fueling of aircraft, automobiles, and trucks). Fuel dispensed from the Navy Exchange (NEX) gasoline station is exempt under the TRI personal use exemption, as are propane and CNG used to heat buildings. Fuel used directly as part of RDAT&E activities is covered under the TRI laboratory exemption (e.g., CT-4 ordnance environmental testing and the Weapons Survivability Laboratory [WSL]).

The remainder of Section 6.2 addresses NAWSCL fuel use not covered under a TRI reporting exemption.

6.2.1 Jet Fuel (F24)

Approximately 5.6 million gal of jet fuel (F24) are received annually at the FLCSD Fuel Farm offloading racks and stored in aboveground storage tanks (Tanks JPT-1 and JPT-2). From these tanks, the fuel is pumped into tank trucks for transfer directly to aircraft (home-based and transient), ground support equipment (GSE), fire training equipment, and RDAT&E tanks and test equipment, as needed.

Non-exempt uses of jet fuel at NAWSCL are:

- Jet fuel in transient aircraft (otherwise used)
- Jet fuel in test cells (otherwise used)
- Jet fuel in fire-training exercises (otherwise used)
- Jet fuel in GSE (otherwise used)
- Jet fuel provided to foreign-owned aircraft (processed)

Jet Fuel in Transient Aircraft

Transient aircraft at NAWSCL are managed by Air Operations personnel; however, they are fueled by FLCSD personnel, as are all aircraft on base. No distinction is made between aircraft arriving at NAWSCL for mission-oriented purposes (e.g., NAWSCL-based aircraft, airlifts delivering personnel and equipment, and aircraft on base for training at the NAWSCL ranges) and those arriving for refueling only. Fueling of aircraft for mission-oriented purposes is covered under the TRI motor vehicle maintenance exemption, per Navy TRI guidance.[5] However, fuel provided to transient aircraft that are at NAWSCL solely for refueling purposes (i.e., "gas-and-go") is not exempt from TRI.

Based on discussions with the NAWSCL Airfield Manager, a limited number of aircraft come to NAWSCL only for fuel because the installation is within restricted air space. Aircraft from Naval Air Station (NAS) Fallon and Marine Corps Air Station (MCAS) Yuma use the NAWSCL training ranges for the day, and then refuel prior to returning to their home base. These aircraft are not considered transient for TRI purposes because the aircraft are on base for training.

Based on a review of fueling logs by the FLCSD Fuel Farm Manager (Gary Johnson) 30,504 gal of jet fuel were provided to transient aircraft as gas-and-go events at NAWSCL in 2020.[6]

Jet Fuel in Test Cells

Two test cells used 9,669 gal of jet fuel in 2020, according to the FLCSD Fuel Farm Manager.[7] However, jet fuel use in these test cells is covered under the TRI laboratory exemption. The jet fuel is used at the CT-4 test cell for environmental testing of ordnance, and at the WSL test cell, it is used as part of weapons system survivability testing.

Jet Fuel in Fire-Training Exercises

According to the FLCSD Fuel Farm Manager, 0 gal of jet fuel were provided to NAWCWD Fire Sciences Technology Office in 2020 for use in their fire suppression testing.[8]

Jet Fuel Used in GSE

GSE units at NAWSCL are operated using jet fuel, except for two small air compressors, which run on gasoline. The total amount of jet fuel provided to GSE in 2020 was 14,033 gal, according

[5] *How to Consider Fuel Thresholds Under EPCRA Section 313,* June 2010, page 5. This is an addendum to the *Navy's Getting Started with The Emergency Planning and Community Right-to-Know Act (EPCRA)—A Basic Guidance Document for Navy Facilities*, May 2009.

[6] Email from Gary Johnson, FLCSD Fuel Farm Manager to Natalie Baum of MMEC Group, June 2, 2021.

[7] Email from Gary Johnson, FLCSD Fuel Farm Manager to Natalie Baum of MMEC Group, June 2, 2021.

[8] Email from Gary Johnson, FLCSD Fuel Farm Manager to Natalie Baum of MMEC Group, June 2, 2021.

to FLCSD records.[9] This amount includes jet fuel supplied directly to GSE and the 500-gal fuel storage tank used by the GSE maintenance shop.

Fuels provided to self-propelled GSE are covered under the TRI motor vehicle maintenance exemption. Fuels for non-self-propelled GSE are not covered under this exemption, and such fuel use must be accounted for in the TRI threshold evaluation.

Approximately 15 of the 57 GSE units at NAWSCL are self-propelled, leaving 42 GSE units for non-self-propelled vehicles.[10] From this statistic, it is estimated that approximately 25% of the jet fuel use is in self-propelled vehicles and 75% is in non-self-propelled vehicles. Therefore, 10,525 gal of F24 used in non-self-propelled GSE must be accounted for in the TRI threshold evaluation.

Jet Fuel Provided to Foreign Government Aircraft

Foreign governments are occasionally invited to perform testing at NAWSCL and are provided jet fuel while onsite. The total amount of jet fuel provided to foreign government aircraft in 2020 was 168,567 gal, according to FLCSD records.[11] However, these vehicles are under the operational or custodial control of NAWSCL while onsite and, per DoD and Navy TRI guidance, fuels provided to these aircraft are covered under the TRI motor vehicle maintenance exemption.[12]

Summary of Non-Exempt Jet Fuel for 2020

- Transient aircraft = 30,504 gal
- Jet engine test cells = 0 gal
- Fire training = 0 gal
- Non-self-propelled GSE = 14,033 gal x 3/4 non-self-propelled GSE = 10,525 gal
- Total non-exempt jet fuel otherwise used = 41,029 gal

To identify TRI chemicals in F24, the NAWSCL supplier was identified through emails with the Defense Logistics Agency (DLA) personnel overseeing jet fuel supplied to Navy facilities. According to Jennifer Bertone, Supply Planner for Energy Americas West, all F24 supplied to southern California Navy installations originates from the Tesoro refinery in Wilmington, CA.[13]

The Tesoro SDS addressing F24 indicates ranges of chemical constituents for a wide variety of the company's jet fuels, including F24, jet propellant (JP)-8, and aviation fuel. The SDS chemical composition data show only naphthalene (0–3%), and ethylbenzene (0–1%) at concentrations above their TRI de minimis levels. These ranges straddle the TRI de minimis level of 0.1% for naphthalene and ethylbenzene. To calculate the amounts of these chemicals in the F24, TRI guidance provided by USEPA is used to yield the following results:[14]

- 41,029 gal x 6.672 lb F24/gal = 273,745 lb F24

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[9] Email from Gary Johnson, FLCSD Fuel Farm Manager to Natalie Baum of MMEC Group, June 2, 2021.

[10] Telephone conversation between Joe Kracke, NASWCL GSE Maintenance (760-939-3699), and Dan Perrin, MMEC Group, June 29, 2017.

[11] Email from Gary Johnson, FLCSD Fuel Farm Manager to Natalie Baum, MMEC Group, June 2, 2021.

[12] *Consolidated Emergency Planning and Community Right-to-Know Act (EPCRA) Policy for DoD Installations, Munitions Activities, and Operational Ranges* (September 21, 2006) page 19: "DoD installation motor vehicle refueling, the refueling of motor vehicles owned or under the operational or custodial control of a DoD installation, is exempt under the motor vehicle maintenance exemption".

[13] Email conversation between Jennifer Bertone, jennifer.bertone@dla.mil, and Natalie Baum of MMEC Group, March 10, 2021.

[14] *Toxic Chemical Release Inventory Reporting Forms and Instructions, Revised 2020 Version*, EPA 740-B-21-001, March 2021, page 26.

- 273,745 lb F24 x [(0.030 - 0.001) / (0.030 – 0.000)] x [(0.030 + 0.001) / 2] = 4,102 lb naphthalene
- 273,745 lb F24 x [(0.010 - 0.001) / (0.010 – 0.000)] x [(0.010 + 0.001) / 2] = 1,355 lb ethylbenzene

6.2.2 Diesel Fuel

Diesel fuel contains TRI chemicals in concentrations above TRI-established de minimis levels. According to FLCSD records, the amount of diesel fuel received in 2020 totaled 270,479 gal.[15] Most of the diesel fuel is dispensed from vehicle fueling stations and is covered under the TRI motor vehicle maintenance exemption.

Diesel fuel use in emergency generators cannot be covered under the TRI motor vehicle maintenance exemption. Fuel used in generators that provide emergency power for computer rooms, radar equipment, airfield lighting, and other operational purposes is not covered under the TRI personal use exemption. However, fuel used in generators that provide backup electricity for general administrative buildings and living quarters is covered under the TRI personal use exemption.

Based on a review of fuel records provided by FLCSD, the amount of diesel fuel used in all generators in 2020 totaled 74,654.1 gal. Individual contributors to this total are:

- Portable generators K-2 to K-275—26,781.1 gal
- Kern County emergency engines—8,843.6 gal
- Pinion Peak engines—6,660.3 gal
- Junction Ranch stationary prime engines—4,008.2 gal
- San Bernardino County emergency engines—9,625.2 gal
- Joint Counter Improvised Explosive Device (IED) Facility (JCIF)–J49—3,510.2 gal
- JCIF–J36—1,323.3 gal
- JCIF–J24—0 gal
- JCIF–J14—1,497.3 gal
- JCIF–J12—0 gal
- JCIF generator shed-two stationary engines—12,404.9 gal

An analysis of SDSs from seven major diesel fuel suppliers shows naphthalene and ethylbenzene in diesel fuel at various amounts above de minimis limits. Using the median concentration result for naphthalene and ethylbenzene, the TRI chemical composition of diesel fuel is assumed to be 0.5% naphthalene and 0% ethylbenzene. The amount of naphthalene used in non-exempt diesel equipment was calculated as follows, based on a density of 7.3 lb per gal and 0.5%:

- 74,654.1 gal x 7.3 lb/gal x 0.005 = 2,725 lb naphthalene

NCG-1 Mineral Products Training Facility

Seabees trained at the Mineral Products Training Facility produce batches of concrete and asphalt during training sessions on road and runway repair. Diesel fuel is used to run the batch plants to produce asphalt and concrete. According to NCG-1 personnel, two to three training

[15] Email conversation with Michael Olokode, michale.olokode@navy.mil, and Natalie Baum of MMEC Group, June 3, 2021.

sessions are held per year for a maximum of 40 days of operation per year. The asphalt batch plants use 393 gal of diesel per day, and the concrete plant uses 42 gal per day for a total of 435 gal per day.[16] Total diesel fuel use at the Mineral Products Training Facility is estimated as follows:

- 435 gal/day x 40 day/year = 17,400 gal/year

Using these diesel fuel SDS data and the provided quantities yields:

- 17,400 gal x 7.3 lb/gal x 0.005 = 635 lb naphthalene

6.2.3 Gasoline

Gasoline contains TRI chemicals in concentrations above TRI-established de minimis levels. According to FLCSD records, the amount of gasoline received in 2020 totaled 202,758 gal.[17] Most of the gasoline is used at vehicle fueling stations and is covered under the TRI motor vehicle maintenance exemption.

Gasoline use in arresting gear engines is not covered under a TRI exemption. Each of the five sets of arresting gear at NAWSCL uses two gasoline-powered engines to recoil the arresting gear wire. Based on a review of fuel records provided by FLCSD, the amount of gasoline used in arresting gear in 2020 totaled 818 gal.

The only other non-exempt use of gasoline at NAWSCL is as fuel for one small GSE air compressor. The amount of gasoline in this unit is estimated to be 6 gal per year.[18] This amount brings the total non-exempt gasoline use to 824 gal per year.

The following TRI chemicals were identified from an Exxon Mobil SDS for gasoline:

- Naphthalene at <1% (= 1% for TRI purpose
- Ethylbenzene at 1–5% (= 3% for TRI purposes)
- Benzene at 0.1–5% (= 2.55% for TRI purposes)
- 1,2,4-Trimethylbenzene at 1–5% (= 3% for TRI purposes)
- N-Hexane at 1–5% (= 3% for TRI purposes)
- Toluene at 5–10% (= 7.5% for TRI purposes)
- Xylene at 5–10% (= 7.5% for TRI purposes)

Applying these percentages to the 82 gal of non-exempt gasoline used at NAWSCL in 2020 yields the following chemical quantities that must be counted within the TRI threshold evaluation (using 7.01 lb/gal for the density):

Table 2. Chemical Quantities in Gasoline

Chemical	Naphthalene	Ethylbenzene	Benzene	124 TMB	n-Hexane	Toluene	Xylene
Quantity (lb)	58	173	147	173	173	433	433

lb = pound(s); TMB = trimethylbenzene

[16] Data from EAC Sean Barezi, Officer In Charge NCG-1 Detachment China Lake to Natalie Baum, MMEC Group, June 3, 2019.

[17] Email conversation with Michael Olokode, michale.olokode@navy.mil, and Natalie Baum of MMEC Group June 3, 2021.

[18] Data from Michael Olokode, NAWSCL Air Quality Program Manager, and Natalie Baum, MMEC Group, July 12, 2021.

6.2.4 Propane Fuel

Propane fuel is used throughout NAWSCL to provide heating to remote buildings, support RDAT&E activities, and power some backup power generators. More than 60 propane tanks are on base, and their combined capacity is greater than 182,000 gal. Propane fuel typically contains the TRI chemical propylene in concentrations greater than its established de minimis level.

Use of propane fuel to heat buildings is covered under the TRI personal use exemption, and propane fuel used directly in RDAT&E activities is covered under the TRI Laboratory exemption.[19] No non-exempt uses of propane fuel were identified for RY2020 at NAWSCL.[20]

6.2.5 Compressed Natural Gas

CNG does not contain any TRI chemicals at concentrations above established de minimis levels and, therefore, does not impact the NAWSCL otherwise-used threshold evaluation.

6.3 Munitions

Extensive RDAT&E of weapons systems is conducted at NAWSCL's vast ranges and is covered under the TRI laboratory exemption.[21] However, other activities conducted at some NAWSCL ranges are not covered under the TRI laboratory exemption, such as training and treatment of explosive hazardous waste by open burn/open detonation (OB/OD).[22]

NAWSCL has two outdoor small arms ranges (Darwin Wash Small Arms Range and Police Pistol Small Arms Range), a bombing training range (Superior Valley Bombing Range), a Navy Seabee Mountain Quarry Range, and an OB/OD area at Burro Canyon. To calculate TRI chemical use, munitions use data for these five locations were compiled by type (e.g., 9-millimeter cartridges and 12-gauge shotgun cartridges) and entered separately into the DoD Toxics Release Inventory Data Delivery System (TRI-DDS) by MMEC Group personnel. The aggregate RY2020 otherwise used results for the five areas are as follows:

- Aluminum (fume or dust)—2,919 lb
- Antimony—69 lb
- Antimony compounds—6 lb
- Asbestos (friable)—2 lb
- Barium compounds—78 lb
- Chromium—7 lb
- Chromium compounds—1 lb
- Copper—4,342 lb
- Dibutyl phthalate—350 lb
- Dimethyl phthalate—848 lb
- Dinitrotoluene—172 lb

[19] *How to Consider Fuel Thresholds Under EPCRA Section 313*, June 2010, page 5. This is an addendum to the *Navy's Getting Started with The Emergency Planning and Community Right-to-Know Act (EPCRA)—A Basic Guidance Document for Navy Facilities*, May 2009.

[20] Email dialog with Michael Olokode, NAWSCL Air Quality Program Manager, and Natalie Baum, MMEC Group, June 4, 2021.

[21] *Questions and Answers for the Emergency Planning and Community Right-to-Know Act—A Companion to the Getting Started with EPCRA Document for Navy Facilities*, September 2002, Question #s 208, 212, 378, 379, and 380.

[22] *Questions and Answers for the Emergency Planning and Community Right-to-Know Act—A Companion to the Getting Started with EPCRA Document for Navy Facilities*, September 2002, Question #s 332, 333, and 381.

- Diphenylamine—120 lb
- Ethylbenzene—8 lb
- Formaldehyde—3 lb
- Lead—3,194.9 lb
- Lead compounds—30 lb otherwise used, 11.7 lb manufactured[23]
- Manganese—32 lb
- Naphthalene—14 lb
- Nickel—25 lb
- Nitroglycerin—4,653 lb
- Titanium tetrachloride—347 lb
- Xylene—61 lb
- Zinc compounds—0 lb

6.4 PFAS In Fire Suppression

For RY2020, 172 PFAS chemicals were added to the list of TRI chemicals that must be considered in the TRI threshold evaluation. PFAS chemicals have been a critical ingredient in aqueous film-forming foam (AFFF) used for fighting petroleum fires at airfields, aboard ships, and in industrial processes; however, the use of these chemicals is being phased out and restricted. AFFF is kept on hand at multiple locations, such as aircraft hangars and the fire department, throughout NAWSCL for use in emergency fire suppression. These locations are presented in Table 3.

For TRI purposes, reportable uses of AFFF at NAWSCL are as follows:

- Emergency use in fire suppression
- Firefighting training activities
- Additions of AFFF to tanks/systems

In 2020, there was one reportable use of AFFF in fire suppression at NAWSCL. On October 20, 2020, approximately 105 gal of AFFF were used by Federal Fire in response to an aircraft mishap.[24]

There were no uses of AFFF for firefighting training at NAWSCL during 2020.[25]

[23] Per TRI instructions, the otherwise-used and manufactured quantities are compared separately with the 100-lb/year threshold for lead compounds (i.e., they are not summed and then compared to the threshold quantity).

[24] Data provided by Christina Graulau, NAVFAC SW Environmental Compliance Core, to MMEC Group on February 4, 2021.

[25] Per Nate Soria, NAWSCL Fire Department, to Natalie Baum of the MMEC Group, June 28, 2021.

Table 3. NAWSCL AFFF Inventory

Building	*Volume (gal)*	*New AFFF Brand*	*Volume (gal)*
20001 Hangar 1	1,400	Ansulite AFC-3MS	1,400
20001 Hangar 1	1,400	Ansulite AFC-3MS	1,400
20279 Hangar 5	600	NA	NA
20279 Hangar 5	600	NA	NA
20279 Hangar 5	300	NA	NA
20279 Hangar 5	300	NA	NA
Fire Station 22	70	NA	NA
Fire Station 22	50	NA	NA
Fire Station 22	150	NA	NA
Fire Station 22	150	NA	NA
Fire Station 22	70	NA	NA

AFFF = aqueous film-forming foam; gal = gallon(s); NA = not applicable

Additionally, a large-scale effort to replace older AFFF products with a Military Specification (MILSPEC)-compliant AFFF has been in effect across Commander, Naval Region Southwest (CNRSW) installations, including NAWSCL. As a result, multiple systems/tanks equipped with AFFF containing PFAS at concentrations above 800 parts per billion (ppb) have been substituted with the MILSPEC-compliant AFFF.[26] The fire suppression systems in Hangar 1 were drained and refilled with a MILSPEC-compliant AFFF in 2020, as presented in Table 3. The amounts of PFAS chemicals in the MILSPEC-compliant AFFF added to these systems are counted toward the TRI reporting threshold in accordance with USEPA TRI reporting guidance relevant to closed systems.

A total of 2,800 gal of MILSPEC-compliant AFFF were added to the systems listed in Table 3 at NAWSCL in 2020. The SDS for Ansulite AFC-3MS does list two proprietary chemical types as components of the mixture (polyfluorinated alkyl polyamide and polyfluorinated alkyl quaternary amine chloride), but does not provide Chemical Abstracts Service (CAS) numbers for these items to determine whether they are TRI-listed PFAS chemicals.[27] However, as directed by Navy guidance on PFAS chemicals, when AFFF manufactured after 2016 is used, as was the case in 2020 at NAWSCL, a concentration of 25 ppb is to be used to determine PFAS chemical use.[28] Applying this concentration to the quantity of AFFF used in fire suppression (105 gal) and swapped out (2,800 gal) in 2020 yields:

- 2,905 gal AFFF x 3.78 liters per gallon (L/gal) x 25 micrograms per liter (µg/L) x 0.0022 lb/gram (g) / 1,000,000 micrograms per gram (µg/g) = 0.0006 lb of PFAS

Without individual PFAS compounds identified in the new AFFF added, the 25-ppb concentration is used for the collective quantity of PFAS chemicals. Given that the 100-lb-per-year TRI threshold was not exceeded for the collective quantity of PFAS chemicals, it was concluded that no individual PFAS chemical quantities exceeded the threshold for RY2020 at NAWSCL.

[26] AFFF Execution Matrix data provided by Christina Graulau, NAVFAC SW Environmental Compliance Core, to MMEC Group on February 4, 2021.

[27] The SDS for Ansulite 3% AFFF dated January 2019 identifies the following types of chemicals in this material: polyfluorinated alkyl polyamide (proprietary) at 1–5% and polyfluorinated alkyl quaternary amine chloride (proprietary) at 0.1–1%.

[28] *Guidance Document for PFAS/PFOA Reporting Under the EPCRA,* December 31, 2020.

Additionally, the SDS for Ansulite AFC-3MS lists 2-(2-butoxyethoxy)ethanol (CAS No. 112-34-5) in the mixture at 10 to 30%. This chemical is under the glycol ether TRI chemical category (N230) and its use must be considered toward the otherwise used threshold evaluation. Using the mid point of the chemical composition range, 20%, yields the following the quantity of 2-(2-butoxyethoxy)ethanol in the Ansulite AFC-3MS added to the AFFF systems in 2020:

- 2,905 gal Ansulite AFC-3MS AFFF x 1.02 x 8.34 lb/gal x 0.20 lb 2-(2-butoxyethoxy)ethanol / lb AFFF = 4,942 lb 2-(2-butoxyethoxy)ethanol

Note that 1.02 is the specific gravity of Ansulite AFC-3MS as listed on the SDS.

6.5 Coso Geothermal Electricity Generation Plants

The Coso geothermal plants are operated by the Coso Operating Company on land within the NAWSCL boundaries. This company owns the equipment at the plants, and the Navy owns the land and the underground geothermal resource.[29] The plants are a public–private venture; however, the Navy has a significant business interest in them because it is paid royalties and a bonus from their operation.[30]

Prior to RY2010, the Coso geothermal plants were considered part of NAWSCL for TRI purposes. For RY2010 and RY2011, the plants were not included as part of the NAWSCL facility for TRI purposes because of their North American Industry Code (NAIC), combined with the fact that neither coal nor oil is burned to generate electricity at the plants. This interpretation would have merit if the plants were outside of the NAWSCL boundaries, but it is a moot point, given that they are within the boundaries.

The USEPA *EPCRA Section 313 Questions and Answers Addendum for Federal Facilities* and the Navy's *TRI Question and Answer Guide* both imply that a Government facility with more than a real estate interest in a third-party operation conducted within its installation must include the third-party operation as part of the Government facility for purposes of TRI reporting.[31,32] Based on this guidance, the Coso geothermal plants should be included in the NAWSCL TRI threshold evaluation and reporting.

The following information regarding TRI chemical use at the Coso geothermal plants was compiled during RY2012 TRI report preparation. No new or additional information has been obtained since that time because the operators of the plants do not agree that they are part of NAWSCL for TRI reporting. MMEC Group has made repeated attempts and has not been able to obtain the information necessary to clearly determine the contribution of the Coso geothermal plants to the NAWSCL TRI reporting thresholds and is relying on information from RY2012.

For RY2012, four TRI chemicals at the Coso geothermal plants were investigated for their impact on the NAWSCL TRI threshold evaluation: mercury and ammonia because they triggered TRI Form Rs from NAWSCL prior to RY2010, and sulfuric acid and hydrogen sulfide because they are known contaminants in the water and steam extracted from the ground at the plants. In the future, a more in-depth review of TRI chemical use and byproduct manufacture at

[29] Telephone conversation with David Meade, Navy Geothermal Program Office, 760-939-4057, and Dan Perrin, MMEC Group, June 2013.

[30] *Geothermal Energy Information on the Navy's Geothermal Program*, Government Accountability Office, GAO-04-513, June 4, 2004, http://www.gao.gov/products/GAO-04-513.

[31] *EPCRA Section 313 Questions and Answers, Addendum for Federal Facilities*, EPA 745-R-00-003, September 2000, page 8, Questions 14 and 15.

[32] *Questions and Answers for the Emergency Planning and Community Right-to-Know Act—A Companion to the Getting Started with EPCRA Document for Navy Facilities*, September 2002, page 39, Questions 131 and 132.

the Coso geothermal plants should be undertaken and the results included in the NAWSCL TRI threshold evaluation.

Details regarding the four chemicals found at the Coso geothermal plants are as follows:

- Hydrogen sulfide is present in trace quantities in the water and steam extracted from the ground and used to power the electricity-generating turbines at the plants. In an early stage of the process, the water is separated from the steam and the water is eventually reinjected into the ground. The steam passes through carbon beds and then a SulFerox process to transform the hydrogen sulfide into elemental sulfur in solid form ("sulfur cake").[33] The sulfur cake is sold to farmers at a nominal price (e.g., $1 per truckload). More than 100 tons of sulfur cake are generated annually by the Coso plants.

  The hydrogen sulfide is not reportable under TRI in this situation for two reasons. First, it is present in concentrations below its TRI de minimis level of 1% throughout the process, and it is not in a waste stream (to which the de minimis exemption cannot be applied). Second, it is not manufactured, processed, or otherwise used. The material it is derived from (groundwater and steam) is not a waste received from offsite, and thus it is not considered otherwise used. It is not manufactured as a byproduct; rather, it is de-manufactured into sulfur. It is not processed because it is not in the final product distributed in commerce. This conclusion was arrived at based on a discussion with personnel manning the USEPA TRI Hotline (800-424-9346).[34]

- Mercury is present in trace quantities in the intake steam and water. According to an unnamed geochemist from the Coso Operating Company, the mercury is in elemental form in the intake steam and water and stays in elemental form as it passes through the carbon beds and the SulFerox process.[35] Approximately 1,000 lb of mercury are removed per year in the carbon beds, and approximately 8 lb per year leave the facility in the sulfur cake. Assuming that the mercury stays in elemental form and that no chemical transitions to or from mercury compounds occur, then mercury at this facility is covered under the TRI "intake water" exemption.

- Approximately 16,000 gal per year of an ammonium thiosulfate solution are used in the SulFerox process.[36] This use is considered "aqueous ammonia" for TRI purposes because the ammonium thiosulfate is a "water dissociable ammonium salt." The ammonium thiosulfate solution SDS indicates that the ammonia content is 14.6% and the density is 11.1 lb per gal. This amount yields 25,930 lb of ammonia, but only 10% of this quantity (2,593 lb) counts toward the 10,000-lb-per-year otherwise-used threshold.[37]

[33] SulFerox is a redox-based process that converts the hydrogen sulfide in sour gas to elemental sulfur through reaction with aqueous ferric iron. The process forms solid sulfur particles that are easily filtered out. For more information, refer to: http://s05.static-shell.com/content/dam/shell/static/globalsolutions/downloads/products-services/licensed-technologies/factsheet-sulferoxscreen.pdf.

[34] June 19, 2013, call to the USEPA TRI Hotline. Dan Perrin of MMEC Group described the Coso geothermal plant situation relevant to hydrogen sulfide. Hotline personnel researched the subject and concluded that Question 95 from *EPCRA Section 313 Questions and Answers*, *Revised 1998 Version*, December 1998 (EPA 745-B-98-004), is the most relevant to this situation.

[35] June 15, 2013, telephone conversation with Colleen Brock, Senior Environmental Coordinator, Coso Operating Company, LLC, 760-764-2272 x 617, and Dan Perrin, MMEC Group.

[36] June 18, 2013, telephone conversation with Colleen Brock, Senior Environmental Coordinator, Coso Operating Company, LLC, 760-764-2272 x 617, and Dan Perrin, MMEC Group.

[37] *Toxic Chemical Release Inventory Reporting Forms and Instructions, Revised 2012 Version*, EPA 260-R-13-001, February 2013, pages 27 and 28.

- Sulfuric acid is used as a descaling agent in processing equipment. It is used only in liquid form and only in equipment that is shut down for maintenance.[38] Only sulfuric acid in acid aerosols (including mists, vapors, gas, fog, and other airborne forms of any particle size) is considered a TRI chemical.

7.0 TRI CHEMICAL THRESHOLD EVALUATION

Table 4 summarizes the quantities of TRI chemical otherwise used from the various organizations and data sources presented in Section 6.0. Based on these results, lead quantities exceeded a TRI reporting threshold for 2020 at NAWSCL.

Separate Form Rs for the NAWSCL range training activities and the main NAWSCL installation (i.e., all non-range activities) are required per Office of the Chief of Naval Operations Environmental Readiness Program Manual (OPNAV M-5090.1, Chapter 26-3.11f (7) (pages 26-16 and 26-17), which states: *One EPA Form 9350-1 Form R shall be submitted for the installation accounting only for releases from the non-range activities and a second EPA Form 9350-1 Form R shall be submitted for the range.* However, as will be discussed in Section 8.1, no non-exempt use or release of lead from non-range activities was identified at NAWSCL for RY2020.

Specific Form Rs required for NAWSCL for RY2020 are as follows:

- Lead for NAWSCL range training activities

[38] June 18, 2013, telephone conversation with Colleen Brock, Senior Environmental Coordinator, Coso Operating Company, LLC, 760-764-2272 x 617, and Dan Perrin, MMEC Group.

Table 4. NAWSCL RY2020 TRI Otherwise Used Chemical Threshold Evaluation Summary

Chemical	Chemical Abstracts Service Number	General Hazardous Materials (lb)	Jet Fuel (lb)	Diesel Fuel (lb)	Gasoline (lb)	Munitions (lb)	AFFF Replacement (lb)	Coso Geothermal (lb)	Total (lb)
Aluminum (fume or dust)	7429-90-5	19	--	--	--	2,919	--	--	2,938
Ammonia	7664-41-7	--	--	--	--	--	--	2,593	2,593
Antimony	7440-36-0	--	--	--	--	69	--	--	69
Antimony compounds	N010	--	--	--	--	6	--	--	6
Barium compounds	N040	4	--	--	--	78	--	--	82
Benzene	71-43-2	--	--	--	147	--	--	--	147
Chromium	7440-47-3	--	--	--	--	7	--	--	7
Chromium compounds	N090	53	--	--	--	1	--	--	54
Copper	7440-50-8	--	--	--	--	4,342	--	--	4,342
Chlorine	7782-50-5	--	--	--	--	--	--	--	--
Dibutyl phthalate	84-74-2	--	--	--	--	350	--	--	350
Diisocyanates	N120	3	--	--	--	--	--	--	3
Dimethyl phthalate	131-11-3	--	--	--	--	848	--	--	848
Diphenylamine	122-39-4	--	--	--	--	120	--	--	120
Ethylbenzene	100-41-4	7	1,355	--	173	8	--	--	1,543
Ethylene glycol	107-21-1	1,213	--	--	--	--	--	--	1,213
Glycol ethers	N230	32	--	--	--	--	4,942	--	4,974
Lead	**7439-92-1**	--	--	--	--	3,194.9	--	--	3,194.9
Lead compounds	N420	0.1	--	--	--	30	--	--	30.1
Manganese	7439-96-5	--	--	--	--	32	--	--	32
Manganese Compounds	N450	171	--	--	--	--	--	--	171
Methylene chloride	75-09-2	30	--	--	--	--	--	--	30
Methyl Isobutyl ketone (MIBK)	108-10-1	32	--	--	--	--	--	--	32
Naphthalene	91-20-3	--	4,102	3,360	58	14	--	--	7,534
N-hexane	110-54-3	1	--	--	173	--	--	--	174
Nickel	7440-02-0	12	--	--	--	25	--	--	37
Nitroglycerin	55-63-0	--	--	--	--	4,653	--	--	4,653
Phenol	108-95-2	20	--	--	--	--	--	--	20
Sodium nitrite	7632-00-0	--	--	--	--	--	--	--	--
Titanium tetrachloride	7550-45-0	--	--	--	--	347	--	--	347
Toluene	108-88-3	122	--	--	433	--	--	--	555
1,2,4-Trimethylbenzene	95-63-6	4	--	--	173	--	--	--	177
Xylene	1330-20-7	46	--	--	433	61	--	--	540
Zinc compounds	N982	21	--	--	--	--	--	--	21

lb = pound(s)
Bold text indicates TRI reporting threshold exceeded.

8.0 FORM R CALCULATIONS—LEAD

The TRI-DDS was used to support TRI release calculations for non-exempt munitions use at NAWSCL. Based on munitions type and usage quantity, TRI-DDS calculates chemical-specific air releases and non-air releases from munitions using DoD-developed emission factors, mass balance assumptions, and munitions constituent data.

The TRI-DDS air releases value is the amount of chemical that can be expected to be released to air, either as a point source (indoor range activity) or a fugitive source (outdoor range activity). Because the five non-exempt munitions use areas at NAWSCL are outdoors, all air emissions are reported as fugitive air releases on the Form R. As per the TRI-DDS instructions, metal air release estimates are based on the mass balance approach (Code C) on the Form R.

Potential chemical releases to land and water and/or transfers offsite are estimated using the quantity of non-air releases from TRI-DDS, augmented with user knowledge regarding the type of range, use of bullet traps, and range clearance activities during the reporting year. If bullet traps are 100% efficient, releases to land are assumed to be zero and the amount reclaimed from the trap is deducted from the non-air releases quantity. If range clearance activities are conducted, this information is to be used to estimate quantities of TRI chemicals transferred offsite, further reducing the non-air releases quantity. If there are no other potential media streams for release (e.g., to water), the remainder of the non-air releases quantity would then be reported as released to land–other disposal (Form R, Section 5.5.4).

8.1 Lead Releases and Offsite Transfers from Munitions Activities

In accordance with Navy TRI policy, chemical releases and offsite transfers from munitions activities (such as the OB/OD activities at Burro Canyon) are considered separate from range activities and are to be addressed on the Form Rs for the main NAWSCL installation.[39] A review of the TRI-DDS results for OB/OD activities at Burro Canyon indicates no lead usage or releases in 2020. Given that no other non-exempt uses of lead were identified at the non-range portions of NAWSCL, a lead Form R is required for the NAWSCL range activities only (see Section 8.2).

OB/OD activities at Burro Canyon are conducted under a Resource Conservation and Recovery Act (RCRA) Part B, Subpart X permit for treatment of explosive hazardous waste such as propellants, explosive mixtures, and ordnance items generated from RDAT&E activities at NAWSCL. The wastes are generated from onsite RDAT&E activities and are consumed during treatment; no offsite transfers of wastes occur.

8.2 Lead Releases and Offsite Transfers from Range Training Activities

Based on DoD TRI-DDS, there were 0.0 lb of lead air releases from the four non-exempt training ranges at NAWSCL (i.e., Superior Valley Bombing Range, Darwin Wash Small Arms Range, Navy Seabee Mountain Quarry Range, and Police Pistol Small Arms Range) in 2020. Lead non-air releases for these four ranges totaled 3,194.9 lb. Lead non-air releases for the individual ranges were as follows:

- Darwin Wash Small Arms Range: 2,838.7 lb
- Police Pistol Small Arms Range: 350.3 lb
- Superior Valley Bombing Range: 5.9 lb

[39] *How to Consider Munitions and Range Activities Under EPCRA Section 313*, March 2011, page 2. This is an addendum to the *Navy's Getting Started with the Emergency Planning and Community Right-to-Know Act (EPCRA)—A Basic Guidance Document for Navy Facilities*, May 2009.

- Navy Seabee Mountain Quarry Range: 0.0 lb

Because these range activities were conducted outdoors, fugitive or non-point air releases were reported to be 0.0 lb on the NAWSCL Form R for range activities.

The two small arms ranges use earthen berm backstops to capture rounds fired at targets.[40] Therefore, the lead released at these ranges is considered released to land (Form R, Section 5.5.4). There were no range-clearance or berm-mining activities at these two ranges in 2020.[41] Therefore, the entire amount of lead non-air releases for these ranges is considered released to land, with no lead being transferred offsite for RY2020.

Similarly, at the Navy Seabee Mountain Quarry and Superior Valley Bombing Ranges, there were no range clearance activities in 2020. As a result, the entire non-air release quantity from TRI-DDS is reported as released to land on the Form R.

In summary, the only values reported on the lead Form R for range activities at NAWSCL for 2020 are:

- 0 lb as fugitive air releases (Form R, Section 5.1)
- 3,194.9 lb released to land (Form R, Section 5.5.4)

8.3 Lead Releases and Offsite Transfers from RDAT&E Ranges

Unexploded ordnance items are typically detonated in place when identified at an NAWSCL RDAT&E range. Debris from this activity, along with target debris, is cleared and stored at the Material Potentially Presenting an Explosive Hazard (MPPEH) Yard for processing prior to being sent offsite for metal recovery. Lead in debris from the detonated ordnance is covered under the TRI laboratory exemption, and lead in target debris is covered under the TRI structural maintenance exemption.[42]

9.0 KEY CHANGES FROM PRECEDING YEAR

Naphthalene quantities did not exceed the TRI otherwise used reporting threshold in RY2020 as they did in RY2019. This change in reporting is based on a 44,000-gal decrease in jet fuel use in transient aircraft in 2020 compared with 2019. Transient aircraft fueling is the largest non-exempt use of naphthalene at NAWSCL. A total of 7 lb in air releases from the use of naphthalene in fuels were reported in 2019. For 2020, no air releases are reported for NAWSCL because of the change in naphthalene's reporting status.

With a decrease in the quantity of munitions fired in 2020 compared with 2019, the quantity of lead released to land from range activities decreased from 4,007.2 lb to 3,194.9 lb.

[40] Earthen berms are not considered bullet traps, per the distinction drawn between the two on page 3 of *How to Consider Munitions and Range Activities under EPCRA Section 313*, March 2011. This is an addendum to the Navy's *Getting Started with The Emergency Planning and Community Right-to-Know Act (EPCRA)—A Basic Guidance Document for Navy Facilities*, May 2009.

[41] Email conversation with EOD1 Bracken (Darwin Wash SAR) and Carl Whiteley (Force Protection), and Natalie Baum of MMEC Group, June 9, 2021, and February 24, 2021.

[42] *Getting Started with the Emergency Planning and Community Right-to-Know Act (EPCRA)—A Basic Guidance Document for Navy Facilities*, May 2009, page 42.